

What Is Claimed Is:

1. A device for bistatic radar applications, in particular, comprised of at least two spaced-apart radar sensors (11, 12) for transmitting and/or receiving operation; each radar sensor (11, 12) having assigned to it an independent, in particular free-running carrier-frequency oscillator (21, 22) and a modulator (51, 52) for impressing pulses of a pulse-signal source (3) onto the output signal emitted by the particular carrier-frequency oscillator (21, 22); a time-synchronous control of the pulses being provided for at least two transmitting/receiving sensors (11, 12) assigned to one another; and an analyzing unit (4) for cross-echo Doppler signals being provided using a mixing device (7) for transmitted and received signals.
2. The device as recited in Claim 1, wherein a common pulsed signal source (3) is provided for radar sensors (11, 12), which are assigned to one another, for transmitting and receiving operation.
3. The device as recited in Claim 1, wherein the time-synchronous control of the pulses is determined by recovering the transmitter pulse repetition frequency (PRF) and by compensating for the phase offset on the basis of the redundant cross-echo measurements ( $S_{11} \leftrightarrow S_{12}$ ) and possibly existing self-generated-echo measurements.
4. The device as recited in one of Claims 1 through 3, wherein for the time-synchronous control in the signal path between the pulsed signal source (3) and the modulator (52), in the receiving branch, a delay circuit (6) is provided ,

which can be adjusted to effect a signal delay of the pulses of the pulsed signal source (3) in accordance with the propagation time of the radiated radar pulses, until reception subsequent to their reflection at at least one object.

5. The device as recited in one of Claims 1 through 4, wherein the analyzing unit (4) includes a mixer (7), to which the transmitted signal can be supplied, on the other hand, and to which an assigned direct-echo Doppler signal and/or cross-echo Doppler signal can be supplied, on the other hand.

6. The device as recited in one of Claims 1 through 5, wherein the analyzing unit (4) is designed to enable signal components of the cross-echo Doppler to be analyzed which essentially lie at frequencies below the pulse repetition frequency.

7. The device as recited in one of Claims 1 through 6, wherein the analyzing unit (4) is designed in a way that enables an analog power estimation of the cross-echo Doppler to be carried out.

8. The device as recited in Claim 7, wherein for analog power estimation of the cross-echo Doppler, one or more bandpasses are provided, along with subsequent analog power estimation of the bandpass signal.

9. The device as recited in Claim 7, wherein means are provided for analog power estimation of the cross-echo Doppler by mixing with a tunable sinusoidal signal and subsequent low-pass filtering (spectrum analyzer principle).

10. The device as recited in one of Claims 1 through 6,

wherein means are provided for sampling the I-received signal and optionally the Q-received signal using the pulse repetition frequency, as well as means for digital filtering and/or frequency analysis and/or power estimation of the cross-echo Doppler (MTD principle).

11. The device as recited in one of Claims 1 through 10, wherein means are provided for continuously or intermittently controlling or regulating the mid-frequency of the cross-echo Doppler, in particular by changing the pulse repetition frequency.

12. The device as recited in Claim 11, wherein the mid-frequency of the cross-echo Doppler is able to be regulated on the basis of a power estimation and/or frequency estimation of the cross-echo Doppler.

13. The device as recited in Claim 11 or 12, wherein, besides the continuous regulation of the mid-frequency of the cross-echo Doppler, a search or capture mode is provided for the first or repeated tracing of the mid-frequency of the cross-echo Doppler.

14. The device as recited in one of Claims 1 through 13, wherein the mid-frequency of the cross-echo Doppler can be controlled or regulated in such a way that a simultaneous analysis of self-generated echoes and cross-echoes is possible.

15. The device as recited in one of Claims 1 through 14, wherein means are provided for controlling or regulating the mid-frequency of the cross-echo Doppler in a way that suppresses a cross feed of cross echoes into the (Doppler) frequency range of the self-generated echoes.

16. The device as recited in one of Claims 1 through 15, wherein the cross-echo Doppler is provided for monitoring the carrier frequencies of the carrier-frequency oscillators (21, 22) as a diagnostic function.

17. The device as recited in one of Claims 1 through 16, wherein a cross-echo transmitter identification is provided on the basis of estimated carrier-frequency differentials, which are based, in particular, on estimations of the active cross-echo Doppler mid-frequency, estimations of the integral submultiple of the quotient of the carrier-frequency differential and pulse repetition frequency, and knowledge of the active pulse repetition frequency.

18. The method as recited in one of Claims 1 through 17, wherein pulse compression, e.g., frequency/phase modulation, intrapulse coding, e.g., pseudo-noise coding, are additionally used for enhancing the interference immunity and/or transmitter identification.

19. The method as recited in one of the preceding Claims 1 through 16, wherein a synchronous pulse jitter is additionally used for both radar sensors (11, 12).